

R E M A R K S

This is in response to the Office Action that was mailed on August 27, 2003. Applicants confirm the election of Group I (claims 1-4) and of the species 4-dodecyloxycarbonyl-N-hydroxyphthalimide within Group I. Claims 5-9 are cancelled, without prejudice to their reassertion in this or a continuing application, in order to facilitate the prosecution of this application. A minor formal amendment is made to claim 1, and claim 3 is amended to depend from a preceding claim. No new matter has been introduced. Claims 1-4 are in the application.

**THE INVENTION.** The present invention provides an catalyst that has a solubility parameter of less than or equal to 26 (MPa)<sup>1/2</sup> (as determined by Fedors method). Such catalysts are highly soluble, even in the absence of solvents or in the presence of low polarity solvents. This enables the catalysts of the present invention to act effectively upon substrates being oxidized, and consequently enables the production in effective yields of the desired oxidation products. Specification, paragraph bridging pages 16-17.

Claims 3 and 4 were rejected under 35 U.S.C. §102(a) as being anticipated by *J. Org. Chem.* 66:7889-7891 (Sawatari). Office Action, pages 6-7. Claims 3 and 4 were rejected under 35 U.S.C. §103(a) as being unpatentable over Sawatari in view of US 6,232,258 B1 or JP 08-38909. Office Action, pages 8-13.

The Sawatari article indicates that it was published on 18 October 2001. The present application is entitled to the benefit under 35 U.S.C. §119 of a date of 9 March 2001. The claim for priority accompanied by a certified copy of the priority application was filed herein on 23 April 2002. A translation of the priority application into the English language, accompanied by a statement that the translation of the certified copy is accurate, is enclosed herewith.

Therefore, the rejections based upon the Sawatari publication should be withdrawn.

Claims 3 and 4 were rejected under 35 U.S.C. §103(a) as being unpatentable over *Electrochimica Acta* 44:385-393 (Gorgy) in view of US 6,232,258 B1 (Ishii). Office Action, pages 13-17. Claims 3 and 4 were rejected under 35 U.S.C. §103(a) as being unpatentable over Gorgy in view of JP 08-38909 (also Ishii). Office Action, pages 19-20.

Gorgy discloses electro-oxidation utilizing electrocatalytic properties of substituted N-hydroxyphthalimides, which undergo a one-electron transfer (page 385, right column, lines 2-7). Gorgy exemplifies N-hydroxyphthalimides substituted by electron withdrawing or donor groups as compounds improving electrocatalytic efficiency (page 392, left column, lines 10-16). This means that the substituted N-hydroxyphthalimides are used stoichiometrically as mediators of the electro-oxidation. All of the imide compounds shown in Gorgy are of high hydrophilicity. The follow table shows the SPs of compounds Nos. 1-10 in Figure 1 of the reference, calculated according to the Fedors method.

No.	1	2	3	4	5	6	7	8	9	10
SP	33.40	31.69	33.08	34.35	35.16	36.50	33.50	33.55	33.55	36.90

In contrast, the catalysts of the present invention have low SPs of less than or equal to 26 (MPa)<sup>1/2</sup>.

The Examiner argues that the two ancillary references would make it *prima facie* obvious to modify a compound disclosed by the Gorgy reference into a compound that is encompassed by claim 3. This clearly involves an improper use by the Examiner of Applicants' disclosure as a guide to modifying the teachings of the Gorgy reference.

For instance, column 4 of US 6,232,258 B1 shows 6 different classes of compounds. **The Examiner selects** one of those classes of compounds. Lines 55-60 in column 4 identify 11 different classes of substituents for the 6 different classes of compounds. **The Examiner selects** one of those classes of substituents. The paragraph bridging columns 4-5 of the patent provides a discussion of many of the substituent classes, including "Examples of the alkoxy carbonyl group include the same alkoxy carbonyl groups as exemplified above, in especial [sic] lower alkoxy carbonyl groups each having about 1 to 4 carbon atoms in the alkoxy moiety". **The Examiner selects** this definition, **but reads it as** being suggestive of alkoxy carbonyl groups having 10 carbon atoms in the alkoxy moiety.

Ishii teach that preferred imide compounds include the compound represented by formula 1, wherein lower alkoxy carbonyl groups each having about 1 to 4 carbons in the alkoxy moiety are typically desirable as R<sup>1</sup> and R<sup>2</sup> (column 3, lines 43-47). That goes too for R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> in formulae (1a) to (1f) -- see (column 4, line 66 to column 5, line 2). Such compounds are highly hydrophilic. Moreover, in the examples of the reference, N-hydroxyphthalimides (SP 33.4) only are used. These are compounds of formula (1c) wherein R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are all hydrogen. Ishii provides no suggestion of a compound with high fat solubility. The oxidation and catalytic reaction of Ishii manifestly differs from the electro-oxidation and stoichiometric reaction of Gorgy, such that there is no motivation to combine these references. Even if these references are combined, however, they do not provide the present invention.

The catalysts of the present invention have low SPs of less than or equal to 26 (MPa)<sup>1/2</sup>, and they are thus highly soluble even in the absence of solvents or in the presence of low polarity solvents. Accordingly, the presently claimed catalysts provide target compounds in good yields. In contrast, the high

hydrophilicity imide compound of the references do not provide target compounds in effective yields.

Specifically, for instance, while nitrocyclohexane is produced in a yield of 40% when using 4-dodecyloxycarbonyl-N-hydroxyphthalimide (see Example 1 herein), it is produced only in a yield of 26% when using N-hydroxyphthalimide in Comparative Example 1. Thus the present invention provides nitrocyclohexane in yields that are roughly double those of the comparative process. In another comparison, the total amount of the four products was 3.47 mmol when using 4-dodecyloxycarbonyl-N-hydroxyphthalimide in Example 2, while it was only 0.17 mmol when using N-hydroxyphthalimide in Comparative Example 2. Such quantitative improvements provided by the present invention are manifestly not suggested by the prior art of record!

SUMMARY. Applicants acknowledge that disclosure which the Examiner has found in the ancillary references may be in those references somewhere. However, it is respectfully submitted that the amount of picking and choosing that the Examiner has done is inconsistent with the statutory standard of "obvious at the time the invention was made to a person having ordinary skill in the art". Moreover, the references even combined are not suggestive of the dramatic improvements in yields provided by the present invention. Therefore, withdrawal of the rejection of claims 3 and 4 over Gorgy in view of US 6,232,258 B1 and JP 08-38909 is respectfully solicited.

Claims 3 and 4 were rejected on the ground of obviousness-type double patenting over claims 4 and 7-9 of US 6,232,258 B1. Office Action, pages 21-23. Double patenting rejections are appropriate only for "commonly owned" applications and patents. However, common ownership does not exist in the present situation, because US 6,232,258 B1 is owned by the entity 'Daicel Chemical Industries, Ltd. along with Yasutaka Ishii', while the present

application is owned by the different entity 'Daicel Chemical Industries, Ltd'. See MPEP 706.02(l)(1). Moreover, inasmuch as claim 3 now depends ultimately from claim 1, claim 3 also requires an SP of less than or equal to 26 (MPa)<sup>1/2</sup>. This clearly distinguishes the compounds of all of the present claims from the compounds of US 6,232,258 B1. Each of these reasons alone provides sufficient basis for withdrawal of the double patenting rejection, which action is respectfully solicited.

Should there be any outstanding issues that need to be resolved in the present application, the Examiner is respectfully requested to contact Richard Gallagher (Reg. No. 28,781) at (703) 205-8008.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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Encl.: Accurate translation of JP 2001-067633